

# DISPOSABLE CLEANING FABRICS

## Field of the Invention

This invention relates to cleaning fabrics and materials and a method for making same which uses inexpensive, generally waste materials. The fabrics are preferably made from non-woven fiber materials with an outer layer of material and a highly absorbent inner layer of material.

## Related Application

This is a continuation in part of App SN 09/593,999, filed June 14, 2000.

## Background of the Invention

Cleaning devices, mops, wipes and covers have historically been made from cotton or synthetic fibers which are twisted and formed into strands and the strands formed into yarns. The yarns may be woven on looms to product sheet form goods. These woven fabric articles are made in more or less degrees of cost. An alternative to traditional fiber yarns has been the use of non-woven cellulose / wood pulp fabrics such as used in tea bags, food and industry machine filters, disposable uniforms, packaging, paper wipes, facial tissue, paper towels and the like. Waste products result from the manufacture of these items. Applicant's invention provides a novel approach to the use of these waste products. An outer strip of inexpensive or waste material is combined with an inner filling of a different type of waste material. The inner and outer materials are combined by a multiplicity of folds or by tacking, stitching, gluing or other connection means. These waste materials are based on various components mixed with

1 preferably cellulose based non-woven materials which are selected for particular end uses on the  
2 basis of differing performance characteristics such as resistance to abrasion, absorbency,  
3 longevity and abrasive qualities. The extreme low cost of these materials, previously considered  
4 waste trimming and lower end by-products of higher end manufacturing processes, makes  
5 feasible a one time or very short time or limited time use for the ultimate purchaser while  
6 maintaining an adequate margin for the manufacturer.

7 Many attempts have been made to produce an inexpensive mop which have met varying  
8 degrees of success. Some methods have used the cheapest fibers or re-claimed fibers in the  
9 spinning process, others have used stacks of fabrics from which strips are cut to form flat ribbons  
10 or strings, and yet others have processed non-woven materials using special stretching and  
11 twisting techniques which reduce absorbency but add sufficient strength to make a usable mop or  
12 other cleaning article. Some are less or more absorbent than others, and some are sturdier in use  
13 than others. The instant invention presents a novel solution to the disposable cleaning article and  
14 mop problem by providing a strip or ribbon of material which is folded about an absorbent inner  
15 material. A mop made in accordance with the disclosed process is of such low expense that it  
16 can be disposed after a limited time which may vary from a single day to several weeks. The  
17 mop is absorbent yet sufficiently robust to provide effective scrubbing and cleaning ability.  
18 Throws, absorbent pads and wipes can also be made from the disclosed yarn substitute; a  
19 particular form of wipe is disclosed.

#### 20 *Description of the Drawings*

21 The following drawings are provided as illustrative examples of the present invention.

22 Fig. 1 is a perspective, fragmentary view of a yarn substitute textile material embodying

1 the present invention.

2 Fig. 2 is a cross-sectional view taken along the lines 2-2, Fig. 1.

3 Fig. 3 is a perspective, fragmentary view of the yarn substitute material embodied so as to  
4 form a wipe or mat.

5 Fig. 4 is a front elevational view of the yarn substitute embodied in the form of a mop.

6 Fig. 5 is an enlarged, cross-sectional view of the mop.

7 Fig. 6 discloses a step in the manufacture of the yarn substitute ribbon shown in Fig. 1.

8 Fig. 7 is a cross-sectional view of the ribbon structure shown in Fig. 6.

9 Fig. 8 is a perspective view of an alternative embodiment mop.

10 Fig. 9 is a fragmentary view of the mop shown in Fig. 8.

11 Fig. 10 is a cross-sectional view of a mop strand of the mop shown in Fig. 8.

12 Fig. 11 is a perspective view of an individual mop strand from the Fig. 8 mop.

13 **Description of the Preferred and Alternate Embodiments**

14 As required, a detailed description of the preferred and alternate embodiments is  
15 disclosed herein, however, other embodiments or configurations may be apparent based upon the  
16 following description to those having ordinary skill in the art.

17 Ref. 1, Fig. 1 generally designates a ribbon forming a yarn substitute. The ribbon 1 is  
18 generally formed of an outer wrapping 3 of a non-woven material such as used in the  
19 manufacture of tea bags, food and industry machine filters, disposable uniforms, packaging, and  
20 the like. The outer wrapping 3 is a waste material remaining from the manufacturer of such  
21 items and are the trimmings or ends of rolls of such material. This scrap material differs in  
22 resistance to abrasion, absorbency, longevity, abrasive qualities and other attributes. Because the

1 ribbon 1 can be put to various purposes as a yarn substitute, the qualities of the outer wrapping 3  
2 are selected based upon the proposed use of the ribbon 1. The outer ribbon 3 is preferably a  
3 single length of material which is folded double, as shown in Fig. 2, into top and bottom layers 4  
4 and 5. The ribbon 1 is filled with other non-woven fabric waste products such as trimmings from  
5 paper wipes, facial tissue, paper towels and the like highly absorbent materials. This filling 7 is  
6 also folded longitudinally, may be folded in multiple pleats accordion style and is gathered  
7 within the outer wrapping 3, Fig. 2. The complete ribbon 1 is preferably in the order of one  
8 quarter inch to one inch wide, and is manufactured in long rolls.

9 To secure the outer wrapping 3, the wrapping 3 may be center stitched 9, as shown in  
10 Figs. 1 and 2, or the stitching 9 may be edge stitching. Other types of bonding may be used as  
11 appropriate, including ultrasonic welding, heat welding, gluing, and other closure techniques.  
12 Alternatively, stitching 9 may not be required at all and the wrapping 3 would be sufficiently  
13 wrapped about the inner filling 7 to provide a complete closure which will remain intact.

14 The ribbon 1 is useful for making inexpensive, disposable sanitary maintenance items  
15 such as the wipe or pad 12 shown in Fig. 3 or the mop 14 shown in Fig. 4. In the wipe or pad 12,  
16 Fig. 3, the ribbon 1 is formed into a flat mat structure 16 as by winding a continuous length of  
17 ribbon 1 about spaced arms which use chains or augers as is commonly known in the art to  
18 produce a coil of material. The distance between the spaced arms is dependent upon the width of  
19 the article to be produced. In the illustrated mat structure 16, the width may be several inches or  
20 several feet depending on the size of wipe or pad to be used. If a wipe, then five or six inches  
21 wide may be appropriate. If a pad, such as to be placed by the bedside of an incontinent person,  
22 or, for example, used for oil spills, or as a packaging protective pad, the structure might be

1 several feet wide. The mat structure 16 is encased within a pillow or envelope 18 with top and  
2 bottom layers sealed closed.

3 When used in the manufacture of a mop 14, the ribbon 1 is formed into a mophead 20 by  
4 coiling about the aforementioned spaced traveling arms with the resultant spiral wound structure  
5 cut to a headband width of approximately six inches. A mop fixture 22 is affixed at the head 23.  
6 The mop fixture 22 includes a spigot 24 for connection to a mop handle 25. The tail end 27 of  
7 the mop, Fig. 4, is left looped, one arm of the mop shown in connection with Fig. 5, another arm  
8 of which would extend parallel to the one arm shown in Fig. 5 in a true longitudinal sectional  
9 view of Fig. 4. Note that the ribbon 1 is left looped at the tail end 27. When a looped end mop is  
10 constructed, no stitching 9 need be done and the outer wrapping 3 may be simply folded over and  
11 retained in place by the looped end. However, if it is desired to construct a cut end mop (not  
12 shown), then it is desired to use appropriate stitching 9 or other edge connection or bonding  
13 technique.

14 A method of manufacture of the ribbon 1 is shown in connection with Figs. 6 and 7,  
15 wherein the wrapping 3 is run through rollers which form a trough 28, the inner filling 7 laid into  
16 the bottom layer 5 and the top layer 4 folded thereover. Fig. 7 shows a folded edge 30 and an  
17 opposite stitched edge 31.

18 The ribbon 1 may be manufactured in various widths, but the preferred ribbon  
19 particularly suitable as a yarn substitute is in the nature of a half-quarter to one-inch in width.

20 The aforementioned yarn substitute provides an inexpensive alternative to cotton-based  
21 twisted yarn products. Such yarn products, when made inexpensively, use short length fibers  
22 which are susceptible to linting off of the yarn strand and further subject to rapid deterioration.

1 The alternative disclosed herein uses interlaid lengths of folded and non-folded non-woven and  
2 cellulose and paper strips or ribbons to make a mop, wipe, pad or other such sanitary  
3 maintenance product of such low cost that it is economically disposable. It will be appreciated  
4 that folded material has been shown herein, however, if long strips of edge cut material are  
5 available, non-folded single strips may be readily used, particularly when laid in in a stacked or  
6 sandwich manner as filling.

7 The waste inner material originates from such products as tea bags, food and industry  
8 machine filters, disposable uniforms, packaging, paper wipes, facial tissue, paper towels, and the  
9 like. Each specific waste product has different physical properties such as high absorbency, heat  
10 retention, and the like which can be suited to various applications. The outer material or wrapper  
11 can be selected to have differing physical properties to suit specific applications, including high  
12 tensile strength, waterproofness, cleaning power, dirt retention or release, non linting, oil and  
13 grease adherence, and the like. Various types of non-woven material from edge trimming waste  
14 suitable for use in the present invention range in weight from 18 to 60 grams per sq. meter.  
15 Suitable materials range from 20 to 50% polypropylene or viscose and up to 10% cotton. The  
16 non-woven types of material suitable for use include spun lace, hydro entangled, thermal bonded  
17 and print bonded.

18 A particular embodiment of a mop made in accordance with the present invention is  
19 shown in connection with Figs. 8-11. A mop 40 is of the closed end, or double-looped end  
20 variety with a headband 42. The mop 40 would normally be attached to a mop holding fixture  
21 (not shown) at the headband 42. The mop 40 is composed of the previously mentioned ribbon  
22 form strands 43 of a fabric material heretofore generally considered waste or of only minimal

1 value. Fig. 9 shows that the strands 43 form opposite looped ends 44 on each side of the  
2 headband 42. Fig. 9 shows a single opposite side of the headband 42. Fig. 9 shows a single  
3 opposite side strand 43 from the mop 40.

4 Fig. 10 shows the strand 43 in cross-section and illustrates that each strand 43 is formed  
5 of an outer wrapper 45 folded longitudinally about in filling strip 46. The outer wrapper 45 is of  
6 a non-woven porous material and the filling strip 46 of a fine mesh non-woven fabric as shown.  
7 A simple layer of the strip 46 forms the core of the strand 43 and the wrapper 45 turns around the  
8 core strip 46 so as to cover it, Fig. 10. The wrapper 45 is pulled open in Fig. 11 for purposes of  
9 illustration. A center line of stitches 48 holds the assembly together.

10 This combination provides an effective and low cost mop which lasts at least several  
11 times before disposal. These mops are intended to be disposable - they are used several times  
12 and then thrown away. The cost is sufficiently low to make disposal cost-effective. With  
13 particular care, and using more durable materials there is no reason why the mops could not last  
14 longer.

15 The invention as described above is not limited to the foregoing description except as set  
16 forth in the following claims.